PTN Electronics

SC121D-TN Scaler Switcher, with Digital Amplifier

User Manual

Please read this manual carefully before using this product.

Content table

1. Function....5
2. Front Panel....6
3. Real Panel....6
4. Specification....7
5. Video/Audio Description....8
6. OSD Operation (On-Screen-Display)....10
7. IR Remote Description....12
8. RS-232 Control Command Introduction....13
9. TCP/IP Controlling....15
10. Firmware Updating....18
11. System Diagram....18
12. Troubleshooting & Maintenance....19

This is a manual for Presentation scaler switcher SC121D-TN.

This manual is only an instruction for operators, not for any maintenance usage. The functions described in this version are updated till October 2011. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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All product function is valid till 2011-10-14

⚠ Operation Notice

In order to ensure the credibility use of the product and the user's safety, please comply with the following items during installation and maintenance:

①

The system must be earthed properly. Please do not use two blades plugs and ensure the alternating power supply ranged from 100v to 240v and from 50Hz to 60Hz.

②

Do not put the machine in a place of too hot or too cold.

③

To avoid any damage by over heat, please keep the working environment good in ventilation to radiate the heat when running the machine.

④

The machine should be turned off when in rainy and humid days or nonuse for a long time.

⑤

The AC power supply line should be disconnected with the power socket during the following operation.

A. Take out or reinstall any component of the machine.
B. Disconnect or re-connect any connector of the machine.

⑥

Please do not attempt to maintain and uncover the machine for there is a high-voltage component inside and the risk of the electric shock.

⑦

Do not splash any chemical product or liquid on or near the equipment.

1. Function

SC121D is a presentation scaler switcher with digital amplifier, it is designed for multi-signal processing, signals of C-Video, S-Video, YPbPr, VGA and HDMI can be scaled to high-resolution HDMI & VGA format and switched out. And it can support firmware updating via USB.
It is the high performance device for the video conference rooms, educational facilities, control rooms, monitoring centers, government institutions and demonstration hall, etc.

Product Features:

1: 12 channels video inputs: 4xHDMI, 4xVGA, 1xYPbPr(Component Video), 2xC-Video (Composite Video), 1x S-Video(Separate Video). All of these inputs will be scaled/switched to HDMI & VGA outputs.
2: supports VESA standard, including: 640x480, 800x600, 1024x768, 1280x1024, 1280x768, 1360x768/60Hz & 1920x1080, supporting the DDC2/B plug and play.
3: The video supports different format, including NTSC, PAL, SECAM. It is auto-adjustable.
4: The video is built in the gain-compensation technology, 10Bit processing.
5: YPbPr supports the resolution of interlaced scanning and progressive scanning, from 480i to 1080p. It is built in the 1080i up-scaling function.
6: Clear graphical user interface, easy for operation.
7: It can adjust the aspect ratio, zoom in/out the output image, special mode for computer with HDMI.
8: The brightness, contrast, sharpness and temperature can be adjusted, color temperature can be custom.
9: The HDMI input support the 1920*1080 full-digital signal, supporting Bit Synchronous Digital audio decoding
10: VGA input can be adjusted, including phase, clock, H position and V position.
11: USB port can be used for updating the firmware.
12: 2 MIC inputs with level control, MIC with pre-amplification, line for directly input. The volume of both MICs can be adjusted at the same time.
13: It supports the power-fail memory function.
14: Advanced picture adjust function, including DNR, CTI, Flesh Tone and Adaptive Luma Control.
15: Freeze output picture functions.
16: The HDMI output resolution supports XGA (1024×768), 720P(1280x720), WXGA(1280×800), HD(1360×768), 1080P(1920×1080).
17: TCP/IP control available, using for network controlling.

2. Front Panel

Front Panel description.

① Power indicating LED. It will keep on red when the unit is connected with power.
② IR sensor. It is for IR remote controlling, receiving the signal of IR remote.
③ Signal indicating LED.
④ Video source selection buttons. You can select video/audio sources by these buttons. And VEDIO source including three different signal: YPbPr, C-Video and S-Video.
⑤ Signal channel selection buttons.
⑥ Resolution selection buttons. These including 1024×768, 1280x720p, 1280×800, 1360×768, 1920×1080p.
⑦ MIC volume control buttons. “MUTE” for mute MIC volume, “△”for MIC volume up, “▽”for MIC volume down, loop controlling.
⑧ Line volume control buttons. “MUTE” for mute line volume, “△”for line volume up, “▽”for line volume down, loop controlling.

3. Real Panel

Rear Panel description

① Two RCA connectors for stereo audio output, one VGA output, one HDMI output with audio embedded, one TP port for HDMI extending (works with PTN TPHD402R).
② Four VGA connectors for VGA inputs.
③ Four HDMI connectors for HDMI inputs.
④ Four 3.5mm audio connectors for VGA audio inputs.
⑤ One Component video input: Y/Pb/Pr, two composite video inputs: C-Video, one Separate video input: S-Video, two pairs L/R for analog audio input.
⑥ One RS232 port for series control, one USB port for firmware update.

⑦ Two MIC connectors: MIC with pre-amplification, LINE for audio direct input. One TCP/IP port for network controlling.
⑧ Amplifier with 2x10W@8Ω output.
⑨ Connector for POWER.
⑩ Grounding protection.

4. Specification

Video Input		**Video Output**	
Input	4 HDMI 4 VGA 1 YPbPr 2 C-Video 1 S-Video	Output	1 HDMI 1 VGA 1 HDMI TP
Input Connector	HDMI female connector VGA(15 pin HD), female connector RCA female connector 4 pin mini DIN connector	Output Connector	HDMI female connector VGA(15 pin HD), female connector RJ-45 connector
Video Signal	HDMI 1.3 RGBHV, RGBs, RGsB, RsBsGs, NTSC 3.58, NTSC 4.42,PAL, SECAM	Video Signal	HDMI 1.3 VGA HDMI TP
Video General			
Resolution Range	1080P,1920*1080 ; HD, 1360*768 720P, 1280*720; WXGA,1280*800 ; XGA, 1024*768.	Bandwidth	HDMI: 4.95Gbps(1.65Gbps per color) C-Video/S-Video: 150MHz YPbPr: 170MHz VGA: 375MHz
Maximum Pixel Clock	145MHz	Video Impedance	75Ω
Gain	0dB	Input / Output Level	0.5V~2.0Vp-p
HDCP management	Compliant with High-bandwidth Digital Content Protection(HDCP) with DVI & HDMI 1.3 standards		
Audio Input		**Audio Output**	
Input	6 Stereo Audio for line audio 2 MIC audio	Output	Stereo audio for line audio 2x10W@8Ω amplifier
Input Connector	4 RCA female connector for YPbPr, C-Video & S-Video audio 4 3.5mm jack for VGA audio HDMI for HDMI embedded audio	Output Connector	RCA connector Amplifier connector
Audio Input Impedance	>10kΩ	Audio Output Impedance	50Ω

Audio General			
Stereo Channel Separation	>80dB @1KHz	CMRR	>90dB @20Hz to 20K Hz
Frequency Response	20Hz~20K Hz		
Control Parts			
Control/Remote	IR remote, Buttons & RS-232, TCP/IP	Pin Configurations	2 = TX, 3 = RX, 5 = GND
General			
Temperature	-20 ~ +70℃	Humidity	10% ~ 90%
Power Supply	100VAC ~ 240VAC, 50/60Hz	Power Consumption	65W
Case Dimension	W483 x H44x D235mm	Product Weight	3.2Kg

5. Video/Audio Description

Below are the detailed descriptions of inputs and outputs.

5.1 C-Video and S-Video input

Supporting PAL/SECAM/NTSC format
Changeable aspect ratio. (Full-screen, wide screen, 4:3)
Color RGB adjustable

5.2 YPbPr input

Input Resolution	Display Parameter				
	Frame frequency		Frame frequency		Frame frequency
720x480I	2:1	525	15.75	60	4:3
720x480P	1:1	525	31.5	60	4:3
720x576I	2:1	625	15.625	50	4:3
720x576P	1:1	625	31.25	50	4:3
1280x720P	1;1	750	45	60	16:9
1280x720P	1:1	750	37.50	50	16:9
1920x1080I	2:1	1125	28.125	50	16:9
1920x1080I	2:1	1125	33.75	60	16:9
1920x1080I	2:1	1250	31.25	50	16:9
1920x1080P	1:1	1250	62.5	50	16:9
1920x1080P	1:1	1250	67.5	50	16:9
The bandwidth is up to 170MHz.					

Changeable aspect ratio. (Full-screen, wide screen, 4:3, auto-adjust)

Supporting HDTV input

5.3 VGA input

The VGA resolution is VESA standard, supporting:

No.	Resolution	No.	Resolution
1	720×400@70 Hz	8	1024×768@70 Hz
2	640×480@60 Hz	9	1024×768@75 Hz
3	640×480@72 Hz	10	1280×768
4	800×600@60 Hz	11	1280×1024@75 Hz
5	800×600@72 Hz	12	1360×768@60Hz
6	800×600@75 Hz	13	1920×1080
7	1024×768@60 Hz		

The bandwidth is up to 375MHz.

The following audio can adjust bass/treble

Changeable aspect ratio. (Full-screen, 4:3)

5.4 HDMI input

HDMI resolution support:

No.	Resolution	No.	Resolution
1	640×480@60 Hz	9	1024×768@70 Hz
2	640×480@72 Hz	10	1024×768@75 Hz
3	640×480@75 Hz	11	1280×1024@75 Hz
4	800×600@56 Hz	12	1280×720P
5	800×600@60 Hz	13	1360×768
6	800×600@72 Hz	14	1920×540
7	800×600@75 Hz	15	1920×1080I
8	1024×768@60 Hz	16	1920×1080P

Digital embedded audio decoding.

Changeable aspect ratio. (Full-screen, wide screen, 4:3, auto-adjust)

Support HDCP1.3, compatible with DVI signal

5.5 Audio input/output

2 pairs of L/R analog audio input, 4 VGA audio and 2 MIC audio inputs

2x10W@8Ω amplifier output. L/R stereo audio output and HDMI embedded audio.

Volume/Bass/Treble adjustable

Audio status presets, changeable scene mode (Wall-mounted, Desk)

6. OSD Operation (On-Screen-Display)

The SC121D provides a nice OSD operation menu, with various functions and language.
The operation introduction is:

6.1 Picture Setting

The first icon from left of OSD menu is to set the picture parameter. It includes the pictures mode preset, color temperature, contrast, brightness, hue, saturation, sharpness, scale, VGA setting and Advance picture adjust.
Some parameters are available depending on different input. For example: VGA setting can be set only with VGA input.
The Advance Picture Adjust can set the Digital Noise Reduction, dynamic color, skin tone and Adaptive Luma adjustment function on or off. And DNR is suggested to be on, it can make the output image clear and smooth.
Please check the picture below:

6.2 Audio Setting

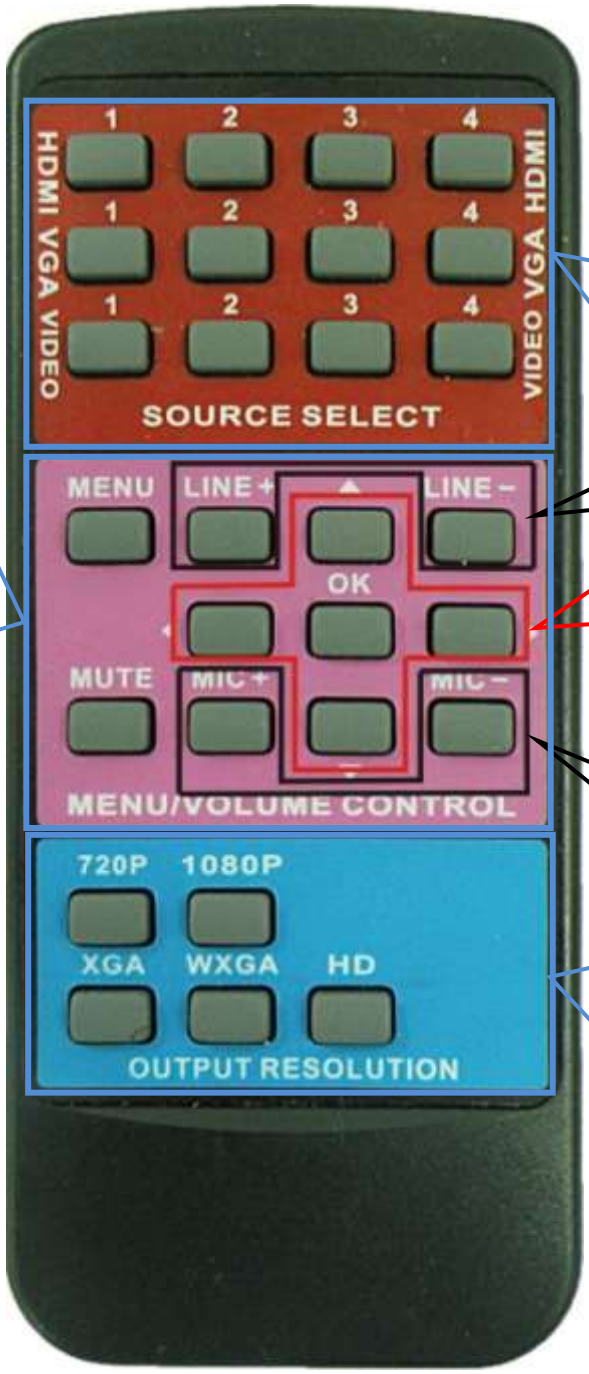
The Second icon from left of OSD menu is to set the audio/sound parameter. It includes the sound effect preset, bass, treble, balance, scene mode, surround and smart volume setting.
Some parameters are available depending on different input.
Please check the picture below:

6.3 System Setting

The Third icon from left of OSD menu is the system setting. It includes the OSD language setting, audio listen only, and freeze output picture etc.
Please check the picture below:

7. IR Remote Description

Remote operation



Source select area, 12 channels for inputs, including:
4 HDMI
4 VGA
2 C-VIDEO
1 S-Video
1 YPbPr

Line volume control area, can work when not in MENU mode.

Direction and OK buttons area, these buttons are available only in MENU mode.

MIC volume control area, can work when not in MENU mode.

Menu/ Volume control area, MUTE for line and MIC audio mute.

Output resolution select area, five different resolutions can be selected, including:
720P: 1280x720
1080P: 1920x1080
XGA: 1024x768
WXGA: 1280x800
HD: 1360x768

8. RS-232 Control Command Introduction

Communication protocol:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

Command (ASCII)	Function Description	Feed back (example) (ASCII)
0600%	MUTE Line	LINE Mute On
0601%	UnMute Line	LINE Mute Off
0602%	Audio turn up	LINE Volume: XX
0603%	Audio turn down	LINE Volume: XX
0604%	Lock the front panel button	Panel Locked
0605%	Unlock the front panel button	Panel UnLocked
01XX%	Preset the volume. The XX is ranging from 00 to 99	Volume: XX
02XX%	Preset the brightness. The XX is ranging from 00 to 99	Brightness: XX
03XX%	Preset the contrast. The XX is ranging from 00 to 99	Contrast: XX
04XX%	Preset the saturation. The XX is ranging from 00 to 99	Saturation: XX
05XX%	Preset the sharpness. The XX is ranging from 00 to 07	Sharpness: XX
0606%	Auto-adjust the input parameter(VGA only)	Adjustment
0607%	Auto-adjust the color temperature	Color Temp: XX
0608%	ZOOM the image, set the aspect ratio	Aspect Ratio: XX
0609%	OK, for OSD selection	OK
0610%	Left of OSD	Left
0611%	Right of OSD	Right
0612%	Up of OSD	Up
0613%	Down of OSD	Down
0614%	set the picture mode	Picture Mode : XX
0615%	SM Mode	Sound Mode: XX
0616%	MENU of OSD	MENU
0617%	Command to reset to factory defaults	Factory reset
0618%	Change the resolution to 1360X768 HD	Resolution: HD 1360X768
0626%	Change the resolution to 1024X768 XGA	Resolution: XGA 1024X768
0627%	Change the resolution to 1280X720 720P	Resolution: 720P 1280X720
0628%	Change the resolution to 1280X800 WXGA	Resolution: WXGA 1280X800
0629%	Change the resolution to 1920X1080 1080P	Resolution: 1080P 1920X1080
0630%	Check the volume level	LINE Volume: XX/MIC Volume: XX
0631%	Check the input source	Source: XXXXXX

0632%	Check the output resolution	Resolution: XXXXXXXX
0633%	Check the image mode	Picture Mode : XX
0634%	Check the audio mode	Sound Mode: XX
0635%	Check the image aspec ratio	Aspect Ratio: XX
0636%	Check the brightness	Brightness: XX
0637%	Check the contrast	Contrast: XX
0638%	Check the saturation	Saturation: XX
0639%	Check the sharpness	Sharpness: XX
0640%	Check the color temperature	Color Temp: XX
0644%	OSD CHANNEL display able	OSD Source: Display
0645%	Shield OSD CHANNEL	OSD Channel (Source): No Display
0646%	Volume Bar display able	Volume Bar: Display
0647%	Volume Bar display unable	Volume Bar: No Display
0648%	Digital audio (HDMI and SPDIF) output able	Digital Sound Ouput: Enable
0649%	Shield digital audio (HDMI and SPDIF) output	Digital Sound Ouput: Disable
0650%	Check OSD CHANNEL display status	OSD Source: Display
0651%	Check Volume Bar display status	Volume Bar: Display
0652%	Check Digital audio output status	Digital Sound Ouput: Enable
0655%	Freeze output image	Freeze: Enable
0656%	Cancel the freezing of output image	Freeze: Disable
0698%	Firmware update	
0701%	Switching to HDMI1 input	Source: HDMI 1
0702%	Switching to HDMI2 input	Source: HDMI 2
0703%	Switching to HDMI3 input	Source: HDMI 3
0704%	Switching to HDMI4 input	Source: HDMI 4
0705%	Switching to VGA1 input	Source: VGA1
0706%	Switching to VGA2 input	Source: VGA2
0707%	Switching to VGA3 input	Source: VGA3
0708%	Switching to VGA4 input	Source: VGA4
0709%	Switching to composite video AV1 input	Source: CVIDEO1
0710%	Switching to YPbPr input	Source: YPbPr
0711%	Switching to S-Video input	Source: SVIDEO
0712%	Switching to composite video AV2 input	Source: CVIDEO2
0720%	Mute Line and MIC	LINE Mute On/MIC Mute On
0721%	UnMute Line and MIC	LINE Mute Off/MIC Mute Off

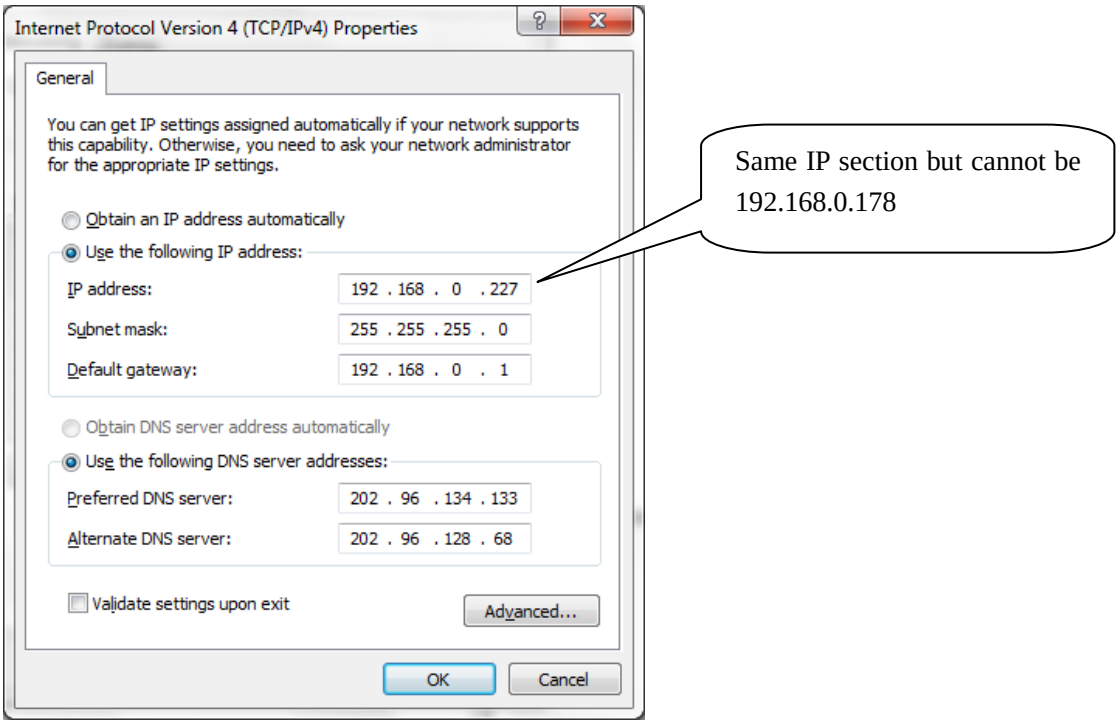
0722%	MUTE MIC	MIC Mute On
0723%	UnMute MIC	MIC Mute Off
0724%	MIC volume turn up	MIC Volume: XX
0725%	MIC volume turn down	MIC Volume: XX
08XX%	Preset MIC volume. The XX is ranging from 00 to 99	MIC Volume: XX

9. TCP/IP Controlling

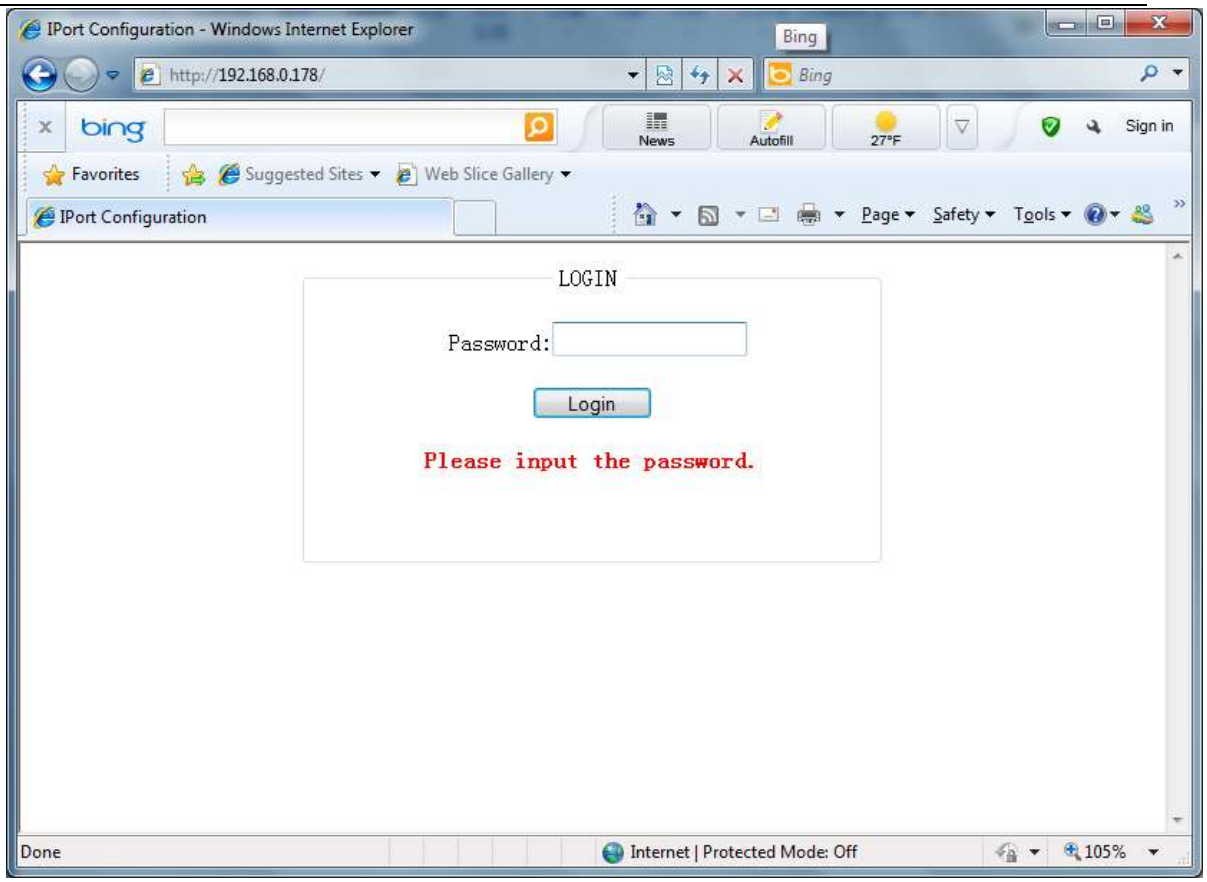
The TP port of SC121D is used for TCP/IP control. Below is the introduction of TCP/IP control:

9.1 IP Configuration

1) Connect a computer to the TP port, set its IP to the same IP section as the default IP of SC121D (192.168.0.178). As picture below:

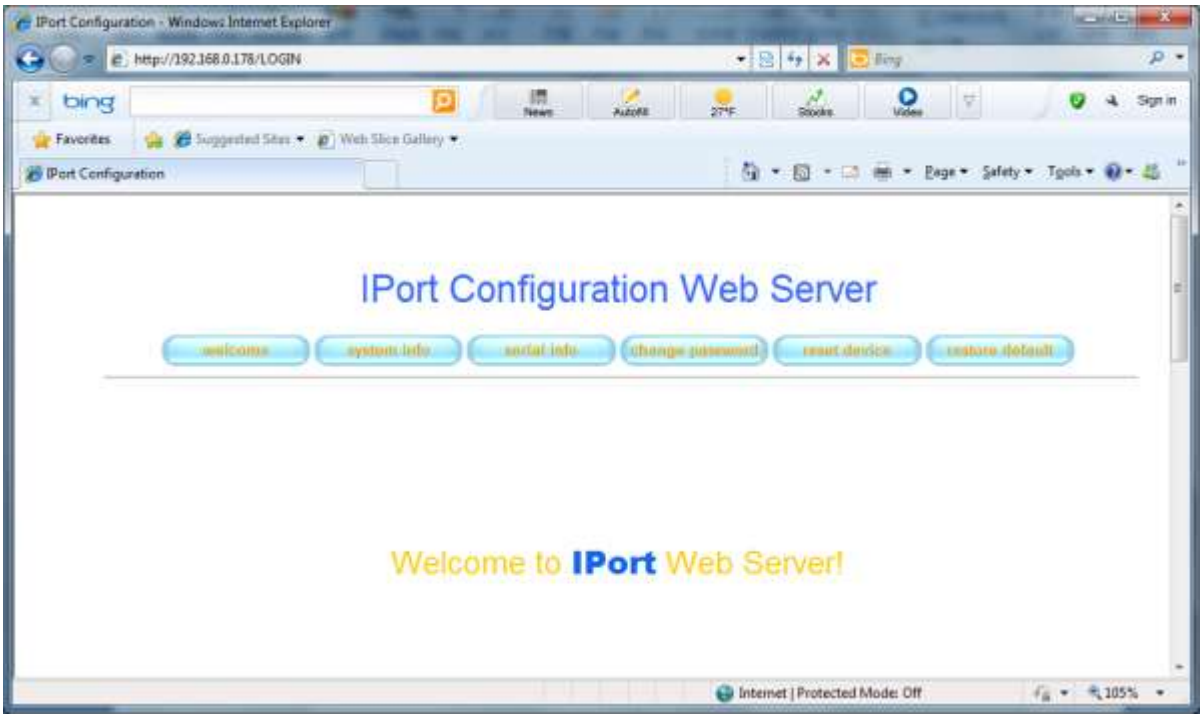

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 227
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 202 . 96 . 134 . 133
Alternate DNS server: 202 . 96 . 128 . 68
Validate settings upon exit
Advanced...
OK
Cancel
Same IP section but cannot be 192.168.0.178

2) Enter the 192.168.0.178 to the Internet Explore, you will see the LOGIN page as below:



3) Enter the password “88888”, and then you can enter the configuration page to configure the IP port, including the IP reset, PW reset etc. As picture below:

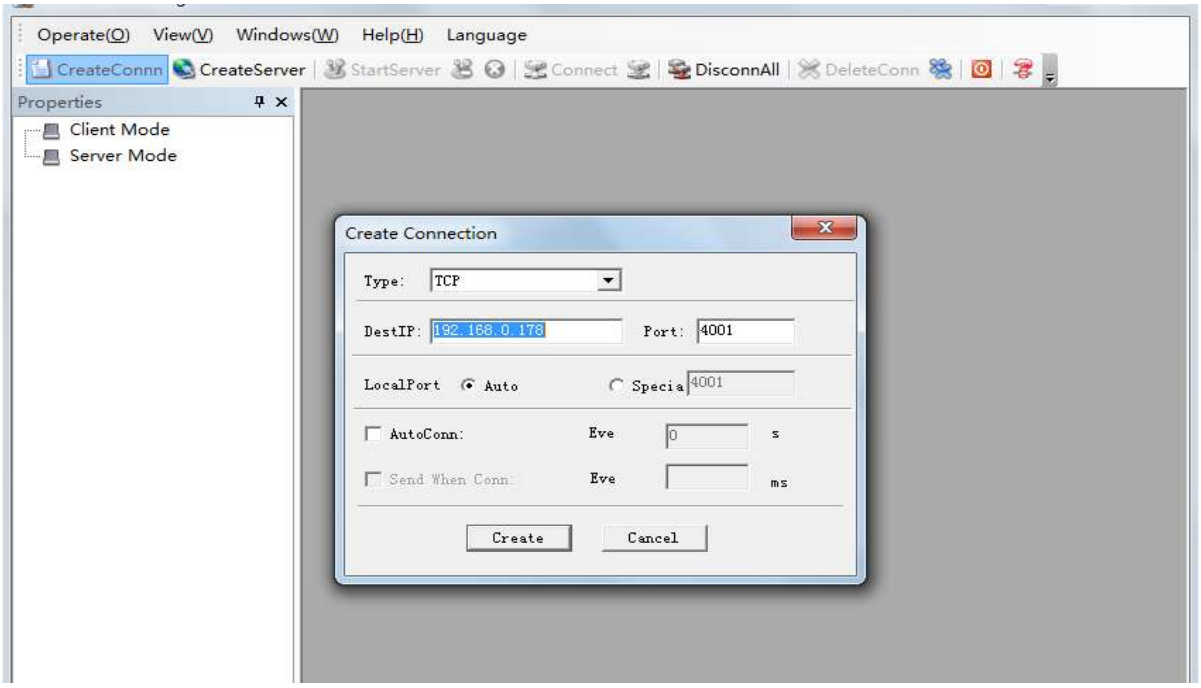
Notice: Serial configuration must be fixed to meet SC121D, so it cannot be changed.



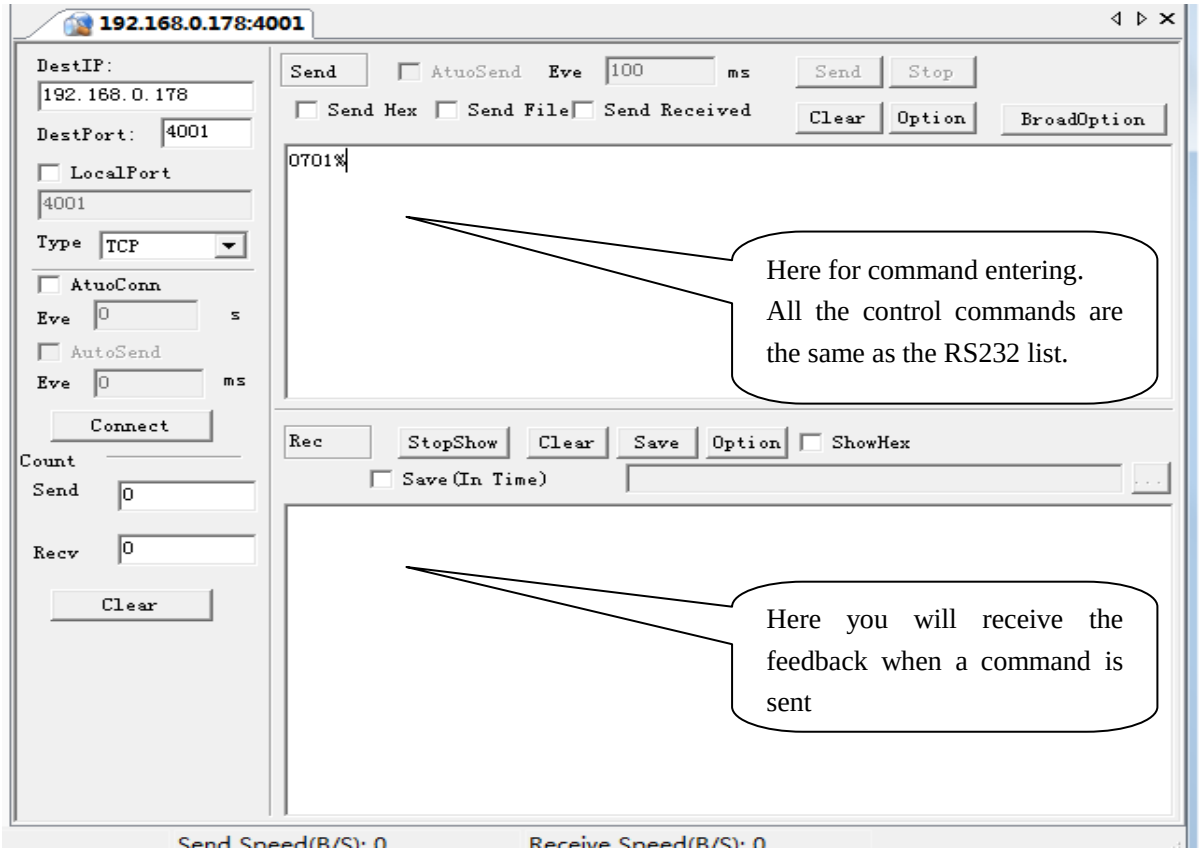
After configuration, reset device, then you can use the new IP address for controlling.

a) Connection and Command Control

1) Connect a computer and SC121D to the same network. Open the PTNET software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of SC121D (default IP: 192.168.0.178, port:4001):



2) After connect successfully, we can enter commands to control the SC121D, as below:

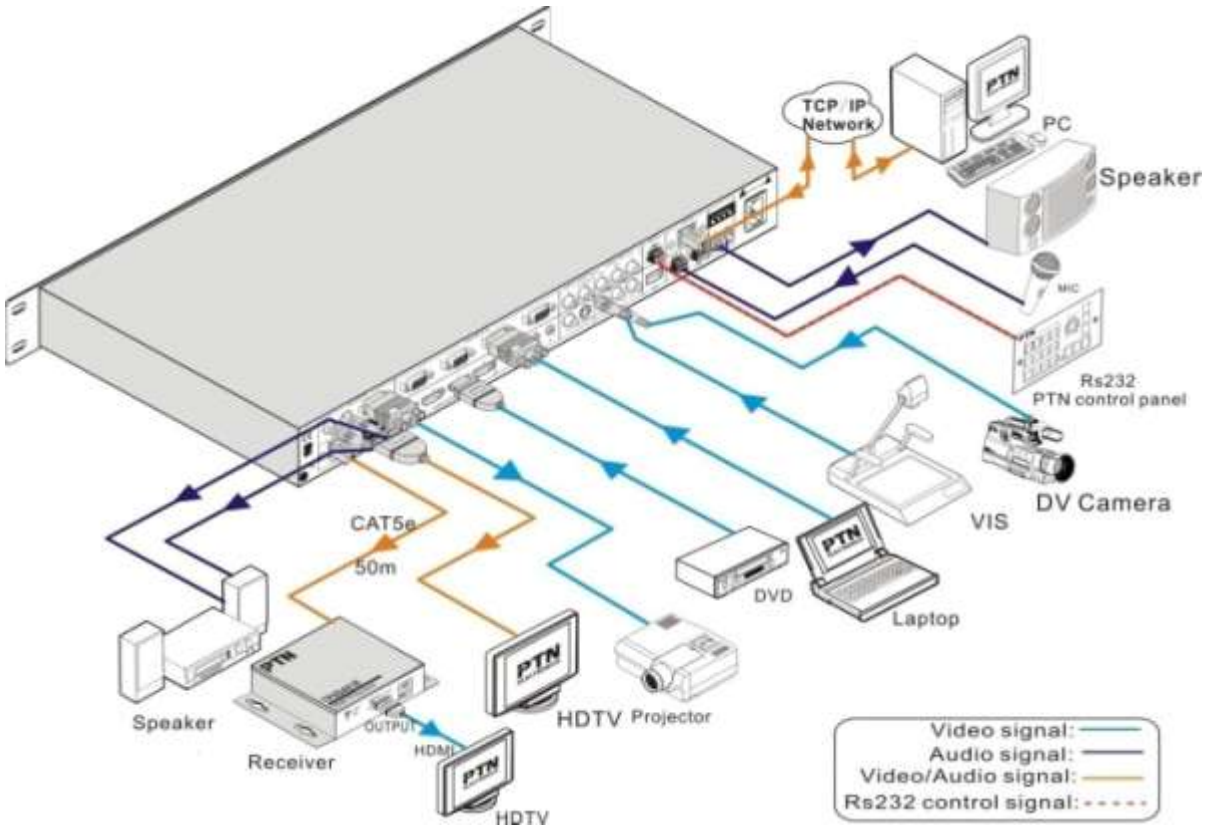


10. Firmware Updating

The SC121D supports firmware field-updating, by USB flash disk. The Operation is:
1: Copy the file “MT23ATV.bin” to a USB flash disk. (The “MT23ATV.bin” file is provided/authorized by PTN engineering department)
2: Plug the USB flash disk to the USB port on SC121D.
3: Pressing the button “HDMI” on the front panel for 6 seconds or sending RS232 command 0698% for updating, then press the button “OK” on the remote or send RS232 command 0609% to confirm update. The SC121D will capture the new firmware from USB flash disk.
4: After updating finish, reboot and send the command “**0617%**” to reset to factory settings.
5: After reset, reboot again.

Notice: The name of the update file must be **MT23ATV.bin**.

11. System Diagram



12. Troubleshooting & Maintenance

1. When images of terminal unit output with ghost, such as the projector output with ghost, please check the projector's setting or try another high quality connection cord.
2. When there is a color losing or no video signal output, please check the input and output end connection of VGA cable.
3. When the remote controller doesn't works:
   A. The battery has no power, please change a new one.
   B. The controller was broken, please repair it.
4. When user cannot control the switcher by computer through its COM port, please check the COM port number in the software and make sure the COM port is in good condition.
5. When switching, there are codes back but no output image, please check if there is any signal at the input end. If there is no signal input, maybe the input connection cord broken or the connectors loosen.
6. If the POWER indicator doesn't work or no respond to any operation, please make sure the power cord connection is well.
7. If the output image is interfered, please make sure the system is grounded well.
8. If the static becomes stronger when connecting the BNC connectors, it maybe due to the incorrect grounding, please correct it otherwise it would damage the switcher.
9. If the switcher cannot be controlled by the buttons on the front panel, RS232 port or IR remote, the switcher may have broken. Please send it to the dealer for repairing.

Remarks: For any more questions or problems, please try to get help from your local distributor, or email PTN at support@PTN-electronics.com.